

**EPA Superfund
Record of Decision:**

**CHEROKEE COUNTY
EPA ID: KSD980741862
OU 01
CHEROKEE COUNTY, KS
12/21/1987**

1) DID NOT EFFECTIVELY PROTECT PUBLIC HEALTH, WELFARE AND THE ENVIRONMENT, 2) WERE NOT FEASIBLE OR RELIABLE FOR THE SITE AND 3) DID NOT PROVIDE SUBSTANTIALLY GREATER PROTECTION, BUT WERE OF GREATER COSTS. TABLE 2 LISTS THE RESPONSE ACTIONS AND TECHNOLOGIES THAT WERE REVIEWED AND SPECIFIES REASONS FOR THE ELIMINATION OF VARIOUS TECHNOLOGIES. THE OUFs MAY BE REVIEWED FOR DETAILS ON THE SCREENING PROCESS.

VARIOUS TECHNOLOGIES TO IMPLEMENT A RELIABLE, GOOD QUALITY WATER SUPPLY FOR THE POPULATION WERE REVIEWED. SOURCES OF WATER CONSIDERED INCLUDED: 1) DEEP AQUIFER, 2) SHALLOW AQUIFER, 3) SURFACE WATER AND 4) IMPORTED WATER. IMPORTED WATER TECHNOLOGIES INCLUDED TANK TRUCK DELIVERY AND BOTTLED WATER DELIVERY. SURFACE WATER AND SHALLOW AQUIFER SOURCES REQUIRED BIOLOGICAL, CHEMICAL AND PHYSICAL TREATMENT TECHNOLOGIES AND A PIPELINE DISTRIBUTION SYSTEM FOR DELIVERY. THE DEEP AQUIFER SOURCE REQUIRED ONLY CHLORINATION AND A PIPE-LINE SYSTEM FOR DELIVERY.

REMEDIAL ALTERNATIVES WERE DEVELOPED UTILIZING THE AVAILABLE TECHNOLOGIES AFTER THE INITIAL TECHNOLOGY SCREENING. THESE PRELIMINARY ALTERNATIVES WERE SCREENED USING THE SAME METHODOLOGY EMPLOYED IN THE TECHNOLOGY SCREENING, ELIMINATING ALTERNATIVES THAT: 1) DID NOT EFFECTIVELY PROTECT PUBLIC HEALTH, WELFARE AND THE ENVIRONMENT, 2) WERE NOT FEASIBLE OR RELIABLE FOR THE SITE AND 3) DID NOT PROVIDE SUBSTANTIALLY GREATER PROTECTION, BUT WERE OF GREATER COSTS. TABLE 3 LISTS THESE PRELIMINARY REMEDIAL ALTERNATIVES AND SPECIFIES REASONS FOR THE ELIMINATION OF VARIOUS ALTERNATIVES. THE OUFs MAY BE REVIEWED FOR DETAILS ON THE SCREENING PROCESS.

DETAILED ANALYSIS OF ALTERNATIVES

THE INITIAL SCREENING OF PRELIMINARY ALTERNATIVES AND RESPONSE TECHNOLOGIES PROVIDED THE BASIS FOR SELECTING ALTERNATIVES FOR DETAILED ANALYSIS. THE SIX REMAINING ALTERNATIVES HAVE BEEN FULLY DISCUSSED IN THE OUFs REPORT. A BRIEF EXPLANATION OF EACH ALTERNATIVE FOLLOWS:

- ALTERNATIVE 1: NO ACTION

NO ACTION WOULD BE TAKEN TO IMPROVE THE WATER SUPPLY TO THE RESIDENTS. IT IS ASSUMED THAT THE RESIDENTS WOULD CONTINUE TO USE THE EXISTING SHALLOW WELLS AS THE PRIMARY SOURCE OF WATER AND THAT NO TREATMENT WOULD BE PROVIDED. PERIODIC MONITORING WAS CONSIDERED AS A BACK-UP TO THE NO-ACTION ALTERNATIVE.

- ALTERNATIVE 2: BOTTLED WATER

THIS ALTERNATIVE WOULD PROVIDE WATER ONLY FOR DRINKING AND FOOD PREPARATION. WATER FOR ALL OTHER USES SUCH AS BATHING, WASHING CLOTHES AND DISHES, TOILET FLUSHING, CLEANING AND LAWN AND GARDEN IRRIGATION WOULD BE PROVIDED BY EXISTING SHALLOW WELLS.

- ALTERNATIVE 3: CITY OF GALENA, DEEP WELLS

WATER WOULD BE COLLECTED FROM THE CITY OF GALENA DEEP AQUIFER WELLS, CHLORINATED AND DISTRIBUTED TO THE RESIDENTS VIA A WATER PIPELINE NETWORK. THE WATER COLLECTION AND TREATMENT WOULD BE MAINTAINED BY THE CITY OF GALENA. THE DISTRIBUTION OF THE WATER PAST THE CITY BOUNDARIES WOULD BE MANAGED BY THE CITY OF GALENA, AN EXISTING RURAL DISTRICT OR A NEW RURAL WATER DISTRICT.

- ALTERNATIVE 4: RURAL WATER DISTRICT DEEP WELL

THE ALTERNATIVE WATER WOULD BE COLLECTED FROM A DEEP AQUIFER WELL TO BE CONSTRUCTED WEST OF THE CITY OF GALENA. THE WATER WOULD BE CHLORINATED AND DISTRIBUTED BY A WATER PIPELINE NETWORK TO THE RESIDENTS. THE ENTIRE SYSTEM WOULD BE MANAGED BY AN EXISTING RURAL WATER DISTRICT, A NEW RURAL WATER DISTRICT OR THE CITY OF GALENA.

- ALTERNATIVE 5: SHALLOW AQUIFER WELL

THE ALTERNATIVE WATER WOULD BE COLLECTED FROM A SHALLOW AQUIFER WELL TO BE CONSTRUCTED WITHIN THE CITY OF GALENA. THE WATER WOULD BE TREATED TO REMOVE THE HEAVY METALS IN A NEWLY CONSTRUCTED WATER TREATMENT PLANT. AFTER TREATMENT, THE WATER WOULD BE DISTRIBUTED BY A WATER PIPELINE NETWORK TO THE RESIDENTS. THE SYSTEM WOULD BE MANAGED BY THE CITY OF GALENA, A NEW RURAL WATER DISTRICT OR AN EXISTING RURAL WATER DISTRICT.

- ALTERNATIVE 6: SPRING RIVER

THE ALTERNATIVE WATER WOULD BE COLLECTED FROM A SURFACE WATER INTAKE ON THE SPRING RIVER TO BE CONSTRUCTED NORTH OF SHORT CREEK. THE WATER WOULD BE TREATED IN A NEWLY CONSTRUCTED WATER TREATMENT PLANT LOCATED NEAR THE INTAKE. AFTER TREATMENT, THE WATER WOULD BE DISTRIBUTED BY A WATER PIPELINE NETWORK TO THE RESIDENTS. THE SYSTEM WOULD BE MANAGED BY THE CITY OF GALENA, A NEW RURAL WATER DISTRICT OR AN EXISTING RURAL WATER DISTRICT.

AS REQUIRED BY 40 CFR SS300.68(H), EPA CONDUCTED A DETAILED ANALYSIS OF EACH OF THE SIX REMEDIAL ALTERNATIVES. THE ANALYSIS INCLUDED: 1) REFINEMENT OF THE FEASIBILITY OF THE ALTERNATIVE, 2) DETAILED COST ESTIMATION, INCLUDING OPERATION AND MAINTENANCE COSTS AND DISTRIBUTION OF COST OVERTIME, 3) EVALUATION IN TERMS OF ENGINEERING, IMPLEMENTATION, RELIABILITY AND CONSTRUCTABILITY, 4) AN ASSESSMENT OF THE EXTENT TO WHICH THE ALTERNATIVE EFFECTIVELY PREVENTS, MITIGATES OR MINIMIZES THREATS TO AND PROVIDES ADEQUATE PROTECTION OF PUBLIC HEALTH AND WELFARE AND THE ENVIRONMENT, 5) AN EVALUATION OF THE EXTENT TO WHICH THE ALTERNATIVE ATTAINS OR EXCEEDS APPLICABLE OR RELEVANT AND APPROPRIATE FEDERAL PUBLIC HEALTH AND ENVIRONMENTAL REQUIREMENTS, AND 6) AN ANALYSIS OF ANY ADVERSE ENVIRONMENTAL IMPACTS. ANALYSES OF RECYCLE/REUSE WASTE MINIMIZATION, WASTE BIODEGRADATION, OR DESTRUCTION OR OTHER ADVANCED, INNOVATIVE OR ALTERNATIVE TECHNOLOGIES WERE NOT REVIEWED. THESE LATER ANALYSES WILL BE MADE IN THE GROUND WATER/SURFACE WATER OUF. FOR A DETAILED DESCRIPTION OF THE ANALYSES CONDUCTED, REFER TO THE OUF REPORT.

THE SIX ALTERNATIVES CONSIDERED IN THE DETAILED EVALUATION WERE COMPARED TO CERCLA CRITERIA FOR SELECTION OF REMEDY AS DEFINED IN SECTION 121 OF CERCLA AND EPA OSWER DIRECTIVES 9355.0-19 AND 9355.0-20. THESE REMEDY SELECTION CRITERIA INCLUDE: 1) COMPLIANCE WITH APPLICABLE AND RELEVANT OR APPROPRIATE STATE AND FEDERAL REGULATIONS (ARARS), 2) REDUCTION OF MOBILITY, TOXICITY OR VOLUME OF WASTE, 3) SHORT-TERM EFFECTIVENESS, 4) LONG-TERM EFFECTIVENESS, 5) PERMANENCE, 6) IMPLEMENTABILITY, 7) COST AND 8) COMMUNITY AND STATE ACCEPTANCE. THE DETAILED ANALYSES OF EACH ALTERNATIVE ARE SUMMARIZED IN THE FOLLOWING SECTIONS AND ON TABLE 4. MORE DETAILED INFORMATION IS LOCATED IN THE OUF REPORT.

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COMPLIANCE WITH ARARS

SECTION 121(D), DEGREE OF CLEANUP, CERCLA, AS AMENDED BY SARA, REQUIRES THAT REMEDIAL ACTIONS SHALL ATTAIN A DEGREE OF CLEANUP OF HAZARDOUS SUBSTANCES RELEASED INTO THE ENVIRONMENT AND A DEGREE OF CONTROL OVER FURTHER RELEASE THAT AT A MINIMUM ASSURES PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT. THIS SECTION ELABORATES ON CLEANUP STANDARDS TO BE EMPLOYED WITH RESPECT TO ANY HAZARDOUS SUBSTANCE OR CONTAMINANT THAT WILL REMAIN ONSITE. IT REQUIRES THAT ANY FEDERAL OR STATE CRITERIA OR STANDARD WHICH ARE LEGALLY APPLICABLE TO THE HAZARDOUS SUBSTANCE OR ARE RELEVANT AND APPROPRIATE UNDER THE CIRCUMSTANCES SHALL BE THE LEVEL OR STANDARD OF CONTROL FOR SUCH HAZARDOUS SUBSTANCE OR CONTAMINANT REMAINING AT THE SITE. CERTAIN FEDERAL OR STATE STANDARDS HAVE BEEN DETERMINED TO BE LEGALLY APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) FOR CLEANUP STANDARDS FOR THE IMPLEMENTATION OF THE REMEDIAL ACTION AT THE GALENA SUBSITE. SINCE HAZARDOUS SUBSTANCES WILL REMAIN AT THE SUBSITE AFTER COMPLETION OF THIS REMEDIAL ACTION OPERABLE UNIT, IT WAS ESSENTIAL TO IDENTIFY ARARS PRIOR TO, AND IN CONJUNCTION WITH, EVALUATION OF THE ALTERNATIVES.

ALL ALTERNATIVES THAT WERE EVALUATED CAN ATTAIN ALL ARARS FOR THE ALTERNATIVE WATER SUPPLY OPERABLE UNIT, WITH EXCEPTION OF THE NO-ACTION ALTERNATIVE.

REDUCTION OF MOBILITY, TOXICITY OR VOLUME OF WASTE

SECTION 121(B) OF CERCLA, AS AMENDED, STATES THAT REMEDIAL ACTIONS INVOLVING TREATMENT, WHICH PERMANENTLY AND SIGNIFICANTLY REDUCE THE VOLUME, MOBILITY OR TOXICITY OF HAZARDOUS MATERIALS, ARE TO BE PREFERRED OVER THOSE NOT INVOLVING SUCH TREATMENT. THIS EVALUATION CRITERION RELATES TO THE ABILITY OF A REMEDIAL ALTERNATIVE TO CONTROL OR ELIMINATE RISKS CAUSED BY THE MOBILITY, TOXICITY OR VOLUME OF A HAZARDOUS WASTE.

ALTERNATIVES 1 THROUGH 4 WOULD HAVE NO DIRECT IMPACT ON THE MOBILITY, TOXICITY OR VOLUME OF HAZARDOUS MATERIALS ON THE GALENA SUBSITE. ALTERNATIVE 5 INVOLVES THE PUMPING AND TREATMENT OF THE SHALLOW GROUND WATER AND MAY HAVE A BENEFICIAL IMPACT ON ACID MINE DRAINAGE INTO SHORT CREEK AND SHOAL CREEK. ALTERNATIVE 5 MAY REDUCE THE CONTAMINANT LEVELS IN THE GROUND WATER WHICH MAY BE AN OVERALL BENEFIT TO THE SUBSITE. ALTERNATIVE 6 INVOLVES TREATMENT OF WATER FROM THE SPRING RIVER. ALTHOUGH ALTERNATIVE 6 MAY REDUCE THE LEVEL OF METALS IN THE SPRING RIVER SLIGHTLY, IT WOULD HAVE LITTLE OVERALL EFFECT ON THE CONTAMINANT LEVELS IN THE RIVER AND WOULD HAVE LIMITED OVERALL EFFECT ON THE CONTAMINANT CONCENTRATION LEVELS IN THE GROUND WATER.

SHORT-TERM EFFECTIVENESS

SHORT-TERM EFFECTIVENESS MEASURES HOW WELL AN ALTERNATIVE PROVIDES PROTECTION OF THE ENVIRONMENT, COMMUNITY AND WORKERS DURING CONSTRUCTION AND THE TIME REQUIRED FOR IMPLEMENTATION OF THE REMEDIAL ACTION.

SHORT-TERM RISK TO THE PUBLIC HEALTH AND THE ENVIRONMENT WOULD REMAIN AT CURRENT LEVELS FOR ALTERNATIVES 1 AND 2. DURING THE CONSTRUCTION OF THE WATERLINES FOR THE PIPELINE NETWORK, ALTERNATIVES 3, 4, 5 AND 6, WOULD PRESENT GREATER POTENTIAL RISKS TO THE WORKERS AND THE COMMUNITY DUE TO THE SOIL DISTURBANCE IN THE MINED AREAS. STREAM TURBIDITY MAY INCREASE IN SHOAL CREEK WHILE CONSTRUCTING A PIPELINE ACROSS THE CREEK IN ALTERNATIVES 3, 4, 5 AND 6. SOME DISRUPTION OF FLOW AND TURBIDITY MAY BE CREATED IN SPRING RIVER DURING THE CONSTRUCTION OF THE WATER INTAKE DESCRIBED IN ALTERNATIVE 6.

ALTERNATIVE 2 MAY BE IMPLEMENTED IMMEDIATELY, WHILE ALTERNATIVES 3, 4, 5 AND 6 MAY TAKE A YEAR OR MORE TO DESIGN AND CONSTRUCT. ALTERNATIVE 1, NO ACTION, HAS NO IMPLEMENTATION.

LONG-TERM EFFECTIVENESS

LONG-TERM EFFECTIVENESS ADDRESSES THE LONG-TERM PROTECTION AND RELIABILITY THAT AN ALTERNATIVE AFFORDS. THIS INCLUDES THE RISK TO THE COMMUNITY ONCE THE REMEDY IS IN PLACE, RISK TO WORKERS DURING OPERATION AND MAINTENANCE (O&M), ENVIRONMENTAL RISK DUE TO RESIDUAL HAZARDOUS SUBSTANCES, LONG-TERM RELIABILITY, O&M REQUIREMENTS, TIME REQUIRED TO ACHIEVE PROTECTION AND THE DIFFICULTY IN DETECTING AND MITIGATING PROBLEMS WITH THE COMPLETED REMEDY.

ALTERNATIVE 1 WOULD NOT BE EFFECTIVE IN PROTECTING PUBLIC HEALTH. THE PUBLIC WOULD CONTINUE TO USE EXISTING WELLS FOR THEIR WATER SUPPLY. A FEW PEOPLE MAY, ON THEIR OWN INITIATIVE, CONVERT TO AN ALTERNATIVE WATER SUPPLY. THE HEALTH OF THE PEOPLE WHO HAVE SHALLOW WELLS WITH POOR QUALITY WATER WOULD BE AT RISK. MORE WELLS MAY BECOME CONTAMINATED IN THE FUTURE, EXPOSING ADDITIONAL PEOPLE TO CONTAMINATION. WITHOUT CONTINUED WATER QUALITY MONITORING, NEWLY CONTAMINATED WELLS WOULD NOT BE READILY IDENTIFIED. ALTERNATIVE 1 WOULD NOT BE EFFECTIVE IN PROTECTING THE ENVIRONMENT.

THE QUALITY OF THE BOTTLED WATER PROVIDED IN ALTERNATIVE 2 WOULD BE EXPECTED TO BE GOOD. THE LEVEL OF SERVICE WOULD BE MUCH LESS THAN IN THE OTHER ACTION ALTERNATIVES. THE EXISTING PRIVATE SHALLOW AQUIFER WELLS WOULD REMAIN IN SERVICE. THEREFORE, WHEN MORE CONVENIENT, THE SHALLOW GROUND WATER MAY BE USED FOR DRINKING AND FOOD PREPARATION. THE

BOTTLED WATER DELIVERY SYSTEM SHOULD BE RELIABLE; HOWEVER, POOR ROAD CONDITIONS AND UNRELIABLE VENDOR OPERATIONS COULD CAUSE SOME DELAYED PRODUCT DELIVERIES. LONG-TERM O&M WOULD BE THE RESPONSIBILITY OF THE PROPERTY OWNERS. DUE TO THE RELATIVELY HIGH MONTHLY COST AND INCONVENIENCE OF HANDLING OF THE BOTTLED WATER, PROPERTY OWNERS MAY STOP THE DELIVERY AND RETURN TO USING THEIR PRIVATE WELLS FOR DRINKING WATER.

ALTERNATIVES 3, 4 AND 6 WOULD PROVIDE EFFECTIVE PROTECTION OF PUBLIC HEALTH AS SOON AS THE CONSTRUCTION AND HOUSE CONNECTIONS ARE COMPLETE AND THE SYSTEM IS OPERATIONAL. THE WATER SUPPLIED SHOULD BE OF GOOD QUALITY. THESE ALTERNATIVES REQUIRE CONVENTIONAL AND WELL-PROVEN DISTRIBUTION AND TREATMENT SYSTEMS. DURING ROUTINE O&M, WORKERS SHOULD NOT BE EXPOSED TO THE HAZARDOUS SUBSTANCES AT THE SUBSITE. OCCASIONALLY, REPAIRS TO THE PIPELINE MAY BE NEEDED IN THE MINED AREAS CAUSING INCREASED POTENTIAL EXPOSURE TO WORKERS AND THE COMMUNITY DURING THOSE REPAIRS. ALTERNATIVES 3 AND 4, WHICH WOULD DRAW WATER FROM THE DEEP AQUIFER, MAY INCREASE THE SHALLOW AQUIFER-DEEP AQUIFER HEAD DIFFERENTIAL. THIS IS NOT EXPECTED TO INCREASE THE POTENTIAL FOR SHALLOW GROUND WATER TO MIGRATE INTO THE ROUBIDOUX SYSTEM.

ALTERNATIVE 5 MAY RESULT IN GREATER PUBLIC HEALTH RISK THAN ALTERNATIVES 3, 4 AND 6. RELIABLE TREATMENT OF THE SHALLOW GROUND WATER MAY BE DIFFICULT. THEREFORE, THE SUPPLIED WATER QUALITY MAY BE OF QUESTIONABLE QUALITY. ALTERNATIVE 5 MAY HAVE BENEFICIAL EFFECTS IN REDUCING THE AMOUNT OF MINE SHAFT WATER AND SHALLOW GROUND WATER THAT DISCHARGES INTO SHORT CREEK AND SHOAL CREEK. ALTERNATIVE 5 MAY PRODUCE A HAZARDOUS MATERIAL REQUIRING STORAGE, TRANSPORTATION AND DISPOSAL. INCREASED ENVIRONMENTAL RISKS MAY BE CREATED IN THE HANDLING AND DISPOSAL OF THIS MATERIAL.

PERMANENCE

THE CRITERION OF PERMANENCE IS SIMILAR TO LONG-TERM EFFECTIVENESS, BUT WITH AN EMPHASIS ON THE NEED FOR MANAGEMENT OF TREATED RESIDUALS AND UNTREATED WASTES. THE LONG-TERM REMEDIATION AND PERMANENT REMEDIATION OF THE SOURCE MATERIAL WILL BE ADDRESSED IN THE SECOND OPERABLE UNIT. THIS OPERABLE UNIT ONLY ADDRESSES THE ALTERNATIVE WATER SUPPLY.

ALTERNATIVES 3, 4 AND 6 WOULD PROVIDE FOR A PERMANENT SOLUTION FOR THE ALTERNATIVE WATER SUPPLY ALTHOUGH CONTINUED O&M WOULD BE REQUIRED TO PROVIDE THE WATER SUPPLY. THE SLUDGE FROM ALTERNATIVE 5 MAY CONTAIN HAZARDOUS MATERIALS, WHICH WOULD REQUIRE REGULATED DISPOSAL AS A RCRA WASTE. THEREFORE, ALTERNATIVE 5 WOULD HAVE CONTINUED O&M OF HAZARDOUS SUBSTANCES. ALTERNATIVE 2 WOULD NOT BE PERMANENT BECAUSE IT WOULD NOT PROVIDE FULL PROTECTION FOR THE PUBLIC HEALTH AND MAY BE ELIMINATED AT ANY TIME BY THE PROPERTY OWNER. ALTERNATIVE 1, NO ACTION, PROVIDES NO PERMANENCE.

IMPLEMENTABILITY

THE IMPLEMENTABILITY CRITERION MEASURES THE TECHNICAL DIFFICULTIES, OPERATIONS, RELIABILITY AND AVAILABILITY OF EACH ALTERNATIVE. IMPLEMENTABILITY ALSO INVOLVES THE ADMINISTRATIVE FEASIBILITY OF EACH ALTERNATIVE.

THE IMPLEMENTABILITY CRITERION DOES NOT APPLY TO THE NO-ACTION ALTERNATIVE SINCE NO MEASURES WOULD BE TAKEN TO PROVIDE A WATER SUPPLY. ALTERNATIVES 2, 3, 4 AND 6 ALL HAVE GOOD TECHNICAL FEASIBILITY AND RELIABILITY. THE PROPOSED WATER COLLECTION, TREATMENT AND DISTRIBUTION METHODS ARE ALL WELL PROVEN TO PERFORM THEIR INTENDED FUNCTIONS. THE TECHNICAL FEASIBILITY AND RELIABILITY OF ALTERNATIVE 5 IS QUESTIONABLE. WATER TREATMENT TO REDUCE ACID MINE DRAINAGE HEAVY METALS TO DRINKING WATER STANDARDS AND DISPOSAL OF THE WASTE PRODUCTS HAVE NOT BEEN WIDELY PERFORMED AND ARE NOT WELL PROVEN PROCESSES. THE AVAILABILITY OF EQUIPMENT FOR ALTERNATIVES 2, 3, 4, 5 AND 6 IS NOT EXPECTED TO CAUSE ANY DELAYS.

ALTERNATIVE 2 WOULD REQUIRE ADMINISTRATION OF THE PROCESS OF INSTALLING BOTTLED WATER DISPENSERS IN THE SERVICE AREA FOR RESIDENCES AND BUSINESSES. THE PROPERTY OWNERS SHOULD BE RESPONSIBLE FOR MAINTAINING THE COMMUNICATIONS WITH THE BOTTLE WATER

DISTRIBUTORS IN ORDER TO RECEIVE A CONTINUOUS SUPPLY.

ALTERNATIVES 3, 4, 5 AND 6 WOULD REQUIRE ADMINISTRATIVE ACTIONS FOR IMPLEMENTATION. THESE ACTIONS ARE FEASIBLE, BUT WOULD REQUIRE THE COOPERATION OF THE WATER USERS IN ALL CASES AND TO SOME EXTENT THE COOPERATION OF THE CITY OF GALENA.

ALTERNATIVE 3 WOULD REQUIRE COOPERATION WITH THE CITY OF GALENA TO REHABILITATE ITS WELLS AND TO DELIVER WATER TO THE CITY LIMITS. THE CITY MAY SPONSOR AND OPERATE THE COMPLETE NEW SERVICE AREA DISTRIBUTION SYSTEMS. IF THE CITY DOES NOT SPONSOR AND OPERATE THE COMPLETE PROJECT, THEN THE FORMATION OR EXPANSION OF A RURAL WATER DISTRICT MAY BE REQUIRED. IN EITHER CASE, PUBLIC SUPPORT OF THE PROJECT WOULD BE NECESSARY TO EXPAND THE CITY OF GALENA'S SERVICE AREA OR FORM A RURAL WATER DISTRICT. ALTERNATIVES 4, 5 AND 6 ALSO WOULD REQUIRE A RURAL WATER DISTRICT OR GALENA TO OPERATE THE SYSTEM. AS IN ALTERNATIVE 3, PUBLIC SUPPORT WOULD BE NECESSARY TO ESTABLISH THE DISTRICT OR TO EXPAND THE CITY OF GALENA SERVICE AREA. THESE THREE ALTERNATIVES ALSO WOULD INCLUDE HAVING THE CITY OF GALENA SUPPLY WATER TO THE NORTH AND SOUTH SERVICE AREAS ADJACENT TO THE CITY. IF THE CITY DOES NOT AGREE TO SUPPLY THESE AREAS, THEN THE PROJECT FACILITIES WOULD HAVE TO BE EXTENDED, AT ADDITIONAL COST, TO SERVE THESE AREAS.

ONLY ALTERNATIVES 5 AND 6 WOULD REQUIRE OFFSITE DISPOSAL FACILITIES. ALTERNATIVE 5 MAY REQUIRE A LANDFILL APPROVED FOR HANDLING EP TOXIC MATERIALS GENERATED BY THE TREATMENT PROCESS. SUCH WASTES SHOULD BE SHIPPED OFFSITE TO AN APPROVED RCRA FACILITY FOR DISPOSAL. ALTERNATIVE 6 WOULD REQUIRE A CONVENTIONAL OFFSITE SANITARY LANDFILL FOR DISPOSAL OF THE LIME SLUDGE GENERATED IN TREATMENT OF THE SURFACE WATER.

THE STATE OF KANSAS WOULD REQUIRE THE DISTRIBUTION OF THE WATER AS DESCRIBED IN ALTERNATIVES 3, 4, 5 AND 6 TO OPERATE UNDER A STATE-ISSUED PERMIT FOR PUBLIC WATER SUPPLY SYSTEMS. ANY RURAL WATER DISTRICT FORMED UNDER ALTERNATIVES 3, 4, 5 OR 6 WOULD HAVE TO MEET THE STATE RULES AND REGULATIONS FOR FORMATION OF SUCH A DISTRICT.

COST

THE COST CRITERION COMPARES THE COST OF THE ALTERNATIVES WITH THE OVERALL EFFECTIVENESS AND IMPLEMENTABILITY. THE COSTS INCLUDE DEVELOPMENT AND CONSTRUCTION COSTS, EQUIPMENT, LAND AND SITE DEVELOPMENT, BUILDINGS AND SERVICES, RELOCATION, DISPOSAL, ENGINEERINGS, LEGAL FEES AND CONTINGENCY ALLOWANCES. THE COST CRITERION ALSO INCLUDES O&M COSTS, INCLUDING OPERATING LABOR, MAINTENANCE MATERIALS AND LABOR, ENERGY REQUIREMENTS, ADMINISTRATIVE COSTS, CONTINGENCY EXPENSES, AND INSURANCE, TAXING AND LICENSING COSTS.

THE 30-YEAR PRESENT WORTH COSTS AND ANNUAL O&M COST OF EACH ALTERNATIVE IS PRESENTED ON TABLE 4. ALTERNATIVE 1 COSTS AND A PORTION OF THE ALTERNATIVE 2 COSTS INCLUDE OPERATION AND MAINTENANCE OF EXISTING WELLS. LONG-TERM MONITORING OF WELLS WAS CONSIDERED FOR ALTERNATIVE 1, ALTHOUGH IS NOT INCLUDED IN THE COST FIGURES CITED.

COMMUNITY AND STATE ACCEPTANCE

THIS CRITERION REVIEWS COMMUNITY AND STATE ACCEPTANCE OF THE ALTERNATIVES. COMPARISON AND REVIEW OF SUPPORTING AND OPPOSING IDEAS ARE MADE TO EVALUATE ACCEPTANCE OF THE REMEDIAL ACTION. ALSO, SINCE FEDERAL LAW REQUIRES THE STATE OF KANSAS TO PROVIDE ASSURANCE OF THE FUNDING OF 10 PERCENT OF THE REMEDIAL ACTION, THE ACCEPTANCE CRITERION REQUIRES A REVIEW OF THE STATE'S ABILITY TO PROVIDE THE REQUIRED FUNDS.

THE COMMENTS RECEIVED INDICATE THAT THE PUBLIC WOULD NOT ACCEPT THE NO-ACTION ALTERNATIVE. MANY RESIDENTS UNDERSTAND THE POTENTIAL HEALTH RISKS ASSOCIATED WITH DRINKING CONTAMINATED WATER AND ALSO ARE CONCERNED ABOUT THE METALS PRESENTING TASTE, ODOR AND COLOR PROBLEMS.

IT IS ANTICIPATED THAT THE CITIZENS BENEFITTING FROM THE REMEDIAL ACTION WILL BE RESPONSIBLE FOR THE 10 PERCENT FUNDS AND THE LONG-TERM O&M OF THE ACTION. IT WAS ANTICIPATED BASED ON DISCUSSIONS WITH KDHE THAT ANY ALTERNATIVE WITH HIGH O&M COSTS WOULD

NOT BE SUPPORTED BY THE COMMUNITY. ALTERNATIVE 2 HAS THE LOWEST CAPITAL COSTS OTHER THAN THE NO-ACTION ALTERNATIVE AND ALSO HAS THE HIGHEST O&M COST. THEREFORE, IT IS EXPECTED TO BE OPPOSED BY THE PUBLIC AS A LONG-TERM SOLUTION. PUBLIC ACCEPTANCE OF ALTERNATIVES 3, 4 AND 6 WAS EXPECTED TO BE HIGH BECAUSE THESE ALTERNATIVES PROVIDE A RELIABLE SUPPLY OF GOOD QUALITY WATER.

IT WAS EXPECTED THAT THE PUBLIC MAY BE WARY OF ACCEPTING THE TREATED SHALLOW GROUND WATER THAT WOULD BE PROVIDED IN ALTERNATIVE 5. ALSO, HANDLING AND DISPOSING OF WASTES FROM THE SHALLOW GROUND WATER TREATMENT MAY BE GENERALLY UNACCEPTABLE TO THE PUBLIC, ESPECIALLY THOSE LOCATED NEAR TRANSPORTATION ROUTES AND THE DISPOSAL SITE.

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SELECTED REMEDY

GENERAL DESCRIPTION

ALTERNATIVE 3 IS THE SELECTED REMEDIAL ACTION FOR PROVISION OF AN ALTERNATIVE WATER SUPPLY FOR RESIDENTS UTILIZING PRIVATE WATER WELLS, WHICH CURRENTLY SUPPLY WATER FROM THE CONTAMINATED SHALLOW GROUND WATER AQUIFER. ALTERNATIVE 3 UTILIZES THE CITY OF GALENA'S DEEP AQUIFER WELLS, WHICH SUPPLY RELIABLE GOOD QUALITY WATER. DISTRIBUTION OF THE WATER WILL BE ACCOMPLISHED THROUGH A PIPELINE NETWORK TO BE CONSTRUCTED THAT WILL REACH ALL HOMES, FARMS AND BUSINESSES IN THE SUBSITE.

THE CITY OF GALENA'S EXISTING WELLS NUMBERS ONE AND TWO WILL BE REHABILITATED TO PROVIDE ADDITIONAL CAPACITY FOR THE EXPANDED SYSTEM. THE REHABILITATION WORK INCLUDES: 1) REPLACEMENT OF UPPER WELL CASING, 2) REPLACEMENT OF PUMPS FOR HIGHER PUMPING CAPACITY, 3) UPGRADING THE WELLHEAD FACILITIES AND 4) ADDITION OF CHLORINATION FACILITIES. IF REHABILITATION BECOMES INFEASIBLE DUE TO UNFORESEEN ONSITE TECHNICALITIES, A NEW DEEP AQUIFER WELL MAY BE DRILLED TO PROVIDE ADDITIONAL WATER. EXISTING PIPELINES WITHIN THE CURRENT MUNICIPAL DISTRIBUTION SYSTEM MAY BE REPAIRED OR UPGRADED TO FACILITATE ADDITIONAL FLOW CAPACITY.

A NEW PIPELINE NETWORK WILL BE CONSTRUCTED TO SUPPLY THE ADDITIONAL SERVICE AREAS, WHICH INCLUDE THE WEST, LOWELL, NORTH AND SOUTH SERVICE AREAS AS SHOWN ON FIGURE 2. EACH OF THE ESTIMATED 418 HOUSES, BUSINESSES AND FARMS IN THESE AREAS WILL BE CONNECTED TO THE WATER DISTRIBUTION SYSTEM. FLOW VALVES WILL BE INSTALLED FOR EACH RESIDENCE AND BUSINESS AND AT THE GALENA DISTRIBUTION AREA BOUNDARIES. A WATER STORAGE TANK WILL BE INSTALLED IN THE WEST SERVICE AREA. THE EXISTING WELLS WILL BE DISCONNECTED FROM THE HOUSES AND BUSINESSES. IF AGREEABLE TO THE PROPERTY OWNERS, THE WELLS WILL BE PLUGGED.

THE SELECTED REMEDY INCLUDES THE PURCHASE AND CONSTRUCTION OF ALL EQUIPMENT AND FACILITIES NEEDED TO OPERATE AND MAINTAIN THE ALTERNATIVE WATER SYSTEM COLLECTION, TREATMENT AND DISTRIBUTION.

THE WELLS, CHLORINATION SYSTEM AND DISTRIBUTION WITHIN THE CITY OF GALENA WILL BE OPERATED AND MAINTAINED BY THE CITY OF GALENA. THE WATER DISTRIBUTION SYSTEM OUTSIDE OF THE CITY OF GALENA WILL BE OPERATED BY AN ENTITY TO BE SELECTED BY THE CITIZENS IN THE SERVICE AREAS OUTSIDE OF GALENA. THIS ENTITY MAY BE THE CITY OF GALENA, A NEWLY FORMED RURAL WATER DISTRICT OR AN EXPANDED EXISTING RURAL WATER DISTRICT.

SCOPE AND FUNCTION OF OPERABLE UNIT

THE ALTERNATIVE WATER SUPPLY OPERABLE UNIT IN THE GALENA SUBSITE IS THE FIRST OF SEVERAL OPERABLE UNITS ON THE CHEROKEE COUNTY SITE. CERCLA SECTION 118, AS AMENDED BY SARA, REQUIRES THE EPA TO GIVE HIGH PRIORITY TO RESPONSE ACTIONS INVOLVING THE RELEASE OF HAZARDOUS SUBSTANCES INTO THE ENVIRONMENT THAT RESULTED IN THE CLOSING OF DRINKING WATER WELLS OR HAS CONTAMINATED A PRINCIPAL DRINKING WATER SUPPLY. THEREFORE, THE ALTERNATIVE WATER SUPPLY OPERABLE UNIT HAS BEEN CONDUCTED PRIOR TO OTHER OPERABLE UNITS FOR THE CHEROKEE COUNTY SITE.

THE PURPOSE OF THIS OPERABLE UNIT IS TO PROVIDE SUITABLE DRINKING WATER TO THE CURRENT POPULATION WITHIN THE SUBSITE. SUITABLE DRINKING WATER IS WATER THAT MEETS THE PRIMARY MCLS. RESIDENCES AND BUSINESSES WITHIN THE CITY OF GALENA OBTAIN THEIR WATER FROM THE PUBLIC WATER SUPPLY, WHICH ALREADY PROVIDES SUITABLE WATER. THE POPULATION OUTSIDE OF GALENA OBTAIN THEIR WATER SUPPLY FROM THE SHALLOW AQUIFER AND ARE AT RISK OF USING WATER EXCEEDING THE MCLS. A SECOND GOAL OF THE REMEDIAL ACTION IS TO PROTECT THE DEEP AQUIFER FROM CONTAMINATION THAT MAY OCCUR AS A RESULT OF IMPLEMENTING AN ALTERNATIVE WATER SUPPLY.

A SECOND OPERABLE UNIT IN THE GALENA SUBSITE WILL ADDRESS THE REMEDIATION OF THE CONTAMINATED GROUND WATER AND SURFACE WATER. THE OTHER SUBSITES WILL BE ADDRESSED AS SEPARATE OPERABLE UNITS.

PERFORMANCE GOALS

SINCE THE SELECTED REMEDIAL ACTION WILL OPERATE AS A PUBLIC WATER SUPPLY, THE WATER MUST MEET THE PRIMARY MCLS AS ESTABLISHED BY THE SAFE DRINKING WATER ACT. THE WATER WILL BE OBTAINED FROM THE ROUBIDOUX AQUIFER AND WILL NEED NO TREATMENT OTHER THAN CHLORINATION. THE GOALS OF THE ACTION WILL BE MET AS SOON AS THE SYSTEM IS CONSTRUCTED AND ON-LINE, I.E., THE ACTION IS PROTECTIVE IMMEDIATELY UPON IMPLEMENTATION. ALL ARARS FOR THE REMEDIAL ACTION WILL BE OBTAINABLE. THE ARARS ARE LISTED ON TABLE 5.

RATIONALE FOR PREFERENCE

THE SELECTED REMEDIAL ACTION IS PREFERRED OVER ALL OTHER ALTERNATIVES BECAUSE IT IS THE LOWEST COST ALTERNATIVE THAT PROVIDES THE GREATEST PROTECTION TO THE PUBLIC HEALTH. WATER COLLECTED FROM THE ROUBIDOUX AQUIFER IS OF GOOD QUALITY AND MEETS THE PRIMARY MCLS. THEREFORE, TREATMENT IS UNNECESSARY, WHICH MAKES THE SELECTED ALTERNATIVE MORE EFFECTIVE AND IMPLEMENTABLE THAN ALTERNATIVES 5 AND 6. ALTERNATIVE 2 MAY BE A PROTECTIVE REMEDY, BUT DUE TO POTENTIAL INTERRUPTED SERVICE, IT IS NOT BE AS EFFECTIVE OR IMPLEMENTABLE AS THE SELECTED REMEDIAL ACTION. ALTERNATIVE 3, THE SELECTED REMEDIAL ACTION, IS SUPERIOR TO ALTERNATIVE 4, WHICH MAY BE JUST AS PROTECTIVE AND EFFECTIVE, BECAUSE OF ADMINISTRATIVE CONSIDERATIONS. THE CITY OF GALENA IS A WELL ESTABLISHED ENTITY AND IS VERY CAPABLE OF MAINTAINING A GOOD SUPPLY OF WATER. THE SELECTED ACTION UTILIZES THE CITY'S EXPERIENCE IN SUPPLYING WATER, WHILE ALTERNATIVE 4 DOES NOT TAKE ADVANTAGE OF THIS EXPERIENCE.

THE COSTS OF THE SELECTED REMEDIAL ACTION ARE LOWER THAN ALTERNATIVES 5 AND 6 AND ARE APPROXIMATELY THE SAME AS ALTERNATIVE 4. ALTERNATIVE 2 HAS A LOWER PRESENT WORTH, ALTHOUGH THE ANNUAL O&M IS UNACCEPTABLY HIGHER.

ALL ALTERNATIVES EXCEPT NO ACTION MEET ARARS, SO THIS WAS NOT A DETERMINING FACTOR. ALTHOUGH ALTERNATIVES 5 AND 6 MAY REDUCE THE MOBILITY, TOXICITY AND VOLUME OF THE CONTAMINANTS, SUCH REDUCTIONS WERE NOT A GOAL FOR THIS OPERABLE UNIT, BUT WILL BE IMPORTANT IN THE SECOND OPERABLE UNIT. THE SHORT-TERM EFFECTIVENESS OF THE SELECTED REMEDIAL ACTION AND ALTERNATIVES 4, 5 AND 6 IS COMPARABLE. SINCE THERE IS NO CONSTRUCTION IN ALTERNATIVE 2, ITS SHORT-TERM EFFECTIVENESS MAY BE HIGHER. THE SELECTED REMEDIAL ACTION AS WELL AS ALTERNATIVES 4, 5 AND 6 PROVIDE A PERMANENT SOLUTION FOR AN ALTERNATIVE WATER SUPPLY.

#TMA

TABLES, MEMORANDA, ATTACHMENTS

#RS

**COMMUNITY RELATIONS RESPONSIVENESS SUMMARY
CHEROKEE COUNTY SITE - GALENA SUBSITE
CHEROKEE COUNTY, KANSAS**

THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) COMPLETED AN OPERABLE UNIT FEASIBILITY STUDY (OUFS) TO EXAMINE DIFFERENT METHODS FOR PROVIDING AN ALTERNATIVE WATER SUPPLY FOR THE RESIDENTS OF THE GALENA SUBSITE OF THE CHEROKEE COUNTY SUPERFUND SITE. THE CHEROKEE COUNTY SITE HAS BEEN LISTED ON THE NATIONAL PRIORITIES LIST (NPL) FOR CLEANUP OF SUPERFUND SITES. THE EPA AND THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT (KDHE) DEVELOPED A PROPOSED PLAN FOR AN ALTERNATIVE WATER SUPPLY BASED ON THE RESULTS OF THE OUFS. A FACT SHEET AND THE "PROPOSED PLAN" OUTLINING THE PROPOSED REMEDIAL ACTION WAS SENT TO ABOUT 300 INTERESTED PERSONS IN OCTOBER 1987.

ON NOVEMBER 4, 1987, A PUBLIC MEETING WAS HELD IN GALENA, KANSAS, TO PRESENT THE RESULTS OF THE OUFS AND THE PROPOSED REMEDIAL ACTION. APPROXIMATELY 100 PEOPLE ATTENDED THE MEETING. REPRESENTATIVES OF EPA, KDHE AND THE CITY OF GALENA PRESENTED THE PROPOSED REMEDIAL ACTION TO THE PUBLIC. THE OUFS REPORT AND THE PROPOSED PLAN WERE DISTRIBUTED AT THE MEETING. THE EPA ALSO ANNOUNCED THAT A 30-DAY PUBLIC COMMENT PERIOD WAS OPEN FROM NOVEMBER 4 TO DECEMBER 4, 1987. FOLLOWING A REQUEST THAT THE COMMENT PERIOD BE EXTENDED, THE 30-DAY PERIOD WAS EXTENDED BY EPA AN ADDITIONAL SEVEN DAYS TO DECEMBER 11, 1987. SIGNIFICANT ORAL COMMENTS FROM THE MEETING AND WRITTEN COMMENTS RECEIVED PRIOR TO AND DURING THE 37-DAY COMMENT PERIOD HAVE BEEN CONSIDERED AND RESPONDED TO HEREIN THIS SUMMARY. RESPONSES TO THE COMMENTS ARE PROVIDED IN THE FOLLOWING SUMMARY. DURING THE COMMENT PERIOD, ELEVEN COMMENT LETTERS WERE RECEIVED FROM THE GENERAL PUBLIC AND ONE COMMENT LETTER WAS RECEIVED FROM SEVEN POTENTIALLY RESPONSIBLE PARTIES (PRPS). DURING THE PUBLIC MEETING ON NOVEMBER 4, APPROXIMATELY TEN PEOPLE MADE VERBAL COMMENTS. AT A MEETING HELD WITH THE PRPS, APPROXIMATELY SIX COMMENTERS MADE VERBAL COMMENTS.

I. GENERAL RESPONSE TO SIGNIFICANT COMMENTS

IN GENERAL, PUBLIC COMMENTS HAVE BEEN FAVORABLE OF AND SUPPORT IMPLEMENTATION OF THE PROPOSED PLAN FOR AN ALTERNATIVE WATER SUPPLY TO THE RESIDENTS OF THE SUBSITE. ONE SIGNIFICANT CONCERN, RAISED BY SEVERAL COMMENTERS, DEALS WITH THE 10 PERCENT MATCHING FUNDS THAT THE STATE OF KANSAS MUST PROVIDE ASSURANCE OF FOR THE REMEDIAL ACTION. ACCORDING TO FEDERAL LAW, EPA WILL PROVIDE 90 PERCENT OF THE FUNDING FOR THE REMEDIAL ACTION PROVIDED THE STATE AGREES TO PAY OR PROVIDES ASSURANCE OF PAYMENT FOR THE REMAINING 10 PERCENT. THE KDHE HAS INDICATED THAT THE LOCAL RESIDENTS, WHO BENEFIT FROM THE REMEDIAL ACTION, SHOULD PROVIDE THE 10 PERCENT MATCHING FUNDS. SEVERAL COMMENTERS SUGGESTED THAT THE LOCAL RESIDENTS MAY NOT BE CAPABLE OF PROVIDING THESE FUNDS.

THE EPA BELIEVES THESE COMMENTS WERE BASED ON PAST EFFORTS OF THESE RESIDENTS TO OBTAIN FUNDING FOR THE ESTABLISHMENT OF A RURAL WATER SUPPLY DISTRICT. SUCH EFFORTS FAILED BECAUSE THE RESIDENTS NEEDED TO SUPPLY 100 PERCENT OF THE CAPITAL COSTS FOR THE WATER SUPPLY DISTRICT. THE EPA BELIEVES THAT BECAUSE THE FEDERAL GOVERNMENT WILL FUND 90 PERCENT OF THE CAPITAL COSTS FOR THE WATER SUPPLY SYSTEM, THESE RESIDENTS WILL BE CAPABLE OF PROVIDING THE REMAINING 10 PERCENT. THE KDHE ALSO BELIEVES THAT FUNDING CAN BE PROVIDED BY THESE RESIDENTS.

IN GENERAL, COMMENTS FROM THE PRPS HAVE BEEN IN OPPOSITION OF THE PROPOSED REMEDIAL ACTION. ONE OF THE MOST SIGNIFICANT CONCERNS RAISED BY SEVERAL PRPS DEALS WITH THE NECESSITY FOR SUPPLYING ALL RESIDENTS WITHIN THE SUBSITE, WHO OBTAIN THEIR WATER FROM THE SHALLOW GROUND WATER, WITH AN ALTERNATIVE WATER SUPPLY. THE COMMENTERS SUGGEST THAT ONLY ABOUT 10 PERCENT OF THESE RESIDENCES NEED AN ALTERNATIVE WATER SUPPLY BECAUSE EPA'S INVESTIGATIONS DEMONSTRATE THAT ABOUT 10 PERCENT OF THESE RESIDENCES HAVE KNOWN CONTAMINATION IN THEIR PRIVATE WATER WELLS.

ALTHOUGH EPA'S INVESTIGATIONS DEMONSTRATE THAT ONLY ABOUT 10 PERCENT OF THESE PRIVATE WELLS ARE CURRENTLY EXCEEDING MAXIMUM CONTAMINANT LEVELS (MCLS), THE INVESTIGATIONS ALSO SHOW THAT THE CONTAMINATION MIGRATES THROUGH THE SHALLOW GROUND WATER WITHIN THE SUBSITE. THIS MIGRATION OF THE CONTAMINANTS THREATENS ALL THE PRIVATE WELLS IN THE SHALLOW GROUND WATER AQUIFER. INVESTIGATIONS AT THE SUBSITE DEMONSTRATE THAT MIGRATION OCCURS DEPENDING ON VARIOUS FACTORS, E.G., WELL PUMPING RATES, ANNUAL PRECIPITATION, SURFACE WATER INFILTRATION RATES, SEASONAL VARIATIONS AND FRACTURES WITHIN THE FORMATIONS CONTAINING THE SHALLOW GROUND WATER. IN ADDITION, INVESTIGATIONS HAVE SHOWN THAT THE WATER QUALITY OF A GIVEN WELL VARIES IN TIME, E.G., ONE SAMPLE EXCEEDING PRIMARY MCLS AND THE NEXT SAMPLE TAKEN A WEEK LATER FROM THE SAME WELL FALLING BELOW MCLS. THE EPA BELIEVES THAT ALL PRIVATE WELLS OBTAINING WATER FROM THIS CONTAMINATED SHALLOW AQUIFER ARE EITHER CURRENTLY CONTAMINATED WITH HAZARDOUS SUBSTANCES OR SUBSTANTIALLY THREATENED WITH SUCH CONTAMINATION.

II. SPECIFIC COMMENTS FROM GENERAL PUBLIC

COMMENT: SEVERAL COMMENTERS SUGGESTED THE LOCAL RESIDENTS WOULD NOT BE ABLE TO PROVIDE THE 10 PERCENT MATCHING FUNDS. SOME COMMENTERS NOTED THAT SEVERAL YEARS AGO, A GROUP OF LOWELL RESIDENTS TRIED TO FORM A RURAL WATER SUPPLY DISTRICT FOR WATER SUPPLY AND DISTRIBUTION, HOWEVER, THEY WERE UNABLE TO OBTAIN NECESSARY FUNDING.

RESPONSE: THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT OF 1980 (CERCLA), AS AMENDED, REQUIRES THE AFFECTED STATE TO PROVIDE ASSURANCE OF THE FUNDING FOR 10 PERCENT OF THE COST OF A REMEDIAL ACTION FUNDED THROUGH THE FEDERAL SUPERFUND. THE KDHE HAS STATED THAT THE 10 PERCENT COST SHARE FOR THE ALTERNATIVE WATER SUPPLY OPERABLE UNIT SHOULD COME FROM THE PEOPLE WHO WOULD BENEFIT FROM THE REMEDIAL ACTION. THE CAPITAL COST PER HOUSEHOLD IS APPROXIMATELY \$1,000 PROVIDED ALL 418 HOUSEHOLDS PARTICIPATE. THE MONTHLY COST FOR WATER USE IS APPROXIMATELY \$20 PER HOUSEHOLD. SINCE EPA PROVIDES 90 PERCENT OF THE FUNDING, IT IS LIKELY THAT THESE RESIDENTS WILL BE ABLE TO OBTAIN THE NECESSARY 10 PERCENT FUNDS. IN ADDITION, LOANS MAY BE AVAILABLE FROM THE FARMERS HOME ADMINISTRATIVE (FHA) FOR ASSISTING A COMMUNITY ORGANIZATION WITH THE 10 PERCENT COST SHARE. THAT COMMUNITY ORGANIZATION WOULD NEED TO DISCUSS THIS WITH FHA.

COMMENT: SEVERAL COMMENTERS SUGGESTED THAT THE CITY OF GALENA WOULD BENEFIT FROM THE ACTION, BUT MAY NOT BE REQUIRED TO PAY ANY PORTION OF THE 10 PERCENT MATCHING FUNDS.

RESPONSE: THE EPA CANNOT SPECIFY HOW THE RESPONSIBILITY FOR PROVIDING THE 10 PERCENT MATCHING FUNDS SHOULD BE DISTRIBUTED AMONG THOSE WHO BENEFIT FROM THE REMEDIAL ACTION. THE STATE OF KANSAS HAS PLACED THIS RESPONSIBILITY UPON THE LOCAL COMMUNITY. THE CITY OF GALENA WOULD INDIRECTLY BENEFIT FROM THE REMEDIAL ACTION BECAUSE THE CITY'S WELLS MAY BE REHABILITATED AND SOME CITY WATER PIPELINES MAY BE REPAIRED OR UPGRADED IF NECESSARY TO ACCOMMODATE INCREASED FLOW CAPACITY.

COMMENT: SEVERAL COMMENTERS STATED THEY THOUGHT THE AFFECTED PEOPLE WOULD PREFER THE FORMATION OF A RURAL WATER DISTRICT, AS IN ALTERNATIVE 4 OF THE OUFs, AS OPPOSED TO THE CITY OF GALENA PROVIDING THE WATER. A COUPLE OF COMMENTERS STATED THAT THE WATER LINES IN GALENA ARE OLD AND COULD HAVE PROBLEMS. THEY DID NOT WANT TO PAY FOR THE UPKEEP OF AN OLD SYSTEM WHEN A TOTALLY NEW SYSTEM COULD BE CONSTRUCTED AND WOULD HAVE LOWER COSTS FOR UPKEEP. ANOTHER COMMENTER WAS CONCERNED ABOUT THE CITY OF GALENA SETTING THE RATE STRUCTURE FOR THE RURAL AREA.

RESPONSE: THE EPA RECOGNIZES THESE CONCERNS. THE AGENCY SELECTED THIS ACTION OVER ALTERNATIVE 4 BECAUSE THE CITY OF GALENA IS EXPERIENCED IN MAINTAINING A PUBLIC WATER SUPPLY SYSTEM. ALSO, THE CITY HAS TRAINED STAFF FOR THE OPERATION AND MAINTENANCE (O&M) OF THE SYSTEM. THE EPA BELIEVES USING THE EXISTING DEEP WELLS IN THE CITY OF GALENA IS THE BEST USE OF AVAILABLE RESOURCES FOR IMPLEMENTATION OF THIS REMEDIAL ACTION.

COMMENT: A COUPLE OF COMMENTERS QUESTIONED WHY EPA DID NOT EXAMINE THE FOOD INTAKE CONTAMINANT PATHWAY IN THE OUFs.

RESPONSE: THE ADDITIONAL EXPOSURE TO THE CONTAMINANTS THROUGH INTAKE OF FOODS (CROPS AND FISH) RAISED ONSITE IS A MINOR PATHWAY. EXPOSURE BY INGESTION OF THE CONTAMINANTS THROUGH WATER IS A MUCH MORE SUBSTANTIAL PATHWAY, THEREFORE, EPA DID NOT QUANTIFY THE FOOD SOURCE PATHWAY. DURING THE REMEDIAL INVESTIGATION, FISH WERE COLLECTED AND ANALYZED. THE LEVELS OF METALS IN THE FISH WERE SIMILAR TO LEVELS IN FISH FOUND STATE-WIDE.

COMMENT: A COUPLE OF COMMENTERS RECOMMENDED THAT BOTTLED WATER BE PROVIDED TO THE HOMES IN THE AFFECTED AREA UNTIL THE REMEDIAL ACTION IS IN PLACE. ONE COMMENTER PROVIDED LITERATURE ON A WATER TREATMENT SYSTEM FOR REMOVING HEAVY METALS.

RESPONSE: THE EPA DOES PROVIDE INTERIM REMEDIES IN CASES WHERE THERE IS AN IMMEDIATE THREAT TO HUMAN HEALTH. THE EPA HAS USED THIS AUTHORITY TO PROVIDE INDIVIDUAL WATER TREATMENT UNITS FOR PRIVATE WELLS WITHIN THIS SUBSITE WHERE THE HUMAN HEALTH THREAT HAS BEEN IMMEDIATE. THE LEVELS OF CONTAMINANTS IN MOST OF THE PRIVATE WELLS IN THE SUBSITE ARE AT LEVELS WHICH DO NOT REPRESENT AN IMMEDIATE THREAT. THE MAJOR HEALTH RISK AT THE SUBSITE IS DUE TO LONG-TERM EXPOSURE TO THE CONTAMINANTS, THEREFORE, AN INTERIM REMEDY WOULD NOT BE APPROPRIATE.

COMMENT: ONE COMMENTER STATED THAT THERE ARE ADDITIONAL COSTS OF THE NO-ACTION ALTERNATIVE THAT WERE NOT DISCUSSED IN THE OUF. HE SUGGESTED EPA ADDRESS THE HEALTH COSTS ASSOCIATED WITH THE DETRIMENTAL HEALTH IMPLICATIONS OF THE NO-ACTION ALTERNATIVE.

RESPONSE: ALTHOUGH ADDITIONAL HEALTH-RELATED COSTS MAY BE INCURRED IF THE NO-ACTION ALTERNATIVE WAS IMPLEMENTED, SUCH COSTS ARE TECHNICALLY IMPRACTICAL FOR EPA TO ESTIMATE.

COMMENT: A COMMENTER SUGGESTED EPA POST SIGNS AROUND THE SUBSITE WARNING OF THE PHYSICAL DANGERS ASSOCIATED WITH THE CHAT FILES AND OPEN MINE SHAFTS.

RESPONSE: SUCH PROBLEMS ARE BEYOND THE JURISDICTIONAL POWERS OF THE EPA. HOWEVER, THESE PROBLEMS HAVE BEEN ADDRESSED IN PART BY THE U.S. BUREAU OF MINES. THE BUREAU CONDUCTED AN INVESTIGATION OF SAFETY HAZARDS AND CONDUCTED FOLLOWUP ACTIVITIES TO CORRECT THOSE AREAS PRESENTING THE GREATEST SAFETY HAZARDS TO THE GENERAL PUBLIC.

COMMENT: ONE COMMENTER SUGGESTED THAT THE EPA CONDUCT LONG-TERM HEALTH SCREENING ON THE RESIDENTS OF THE SUBSITE TO DETERMINE IF THE REMEDIAL ACTION ACTUALLY IMPROVES THE HEALTH OF THE LOCAL POPULATION.

RESPONSE: THE EPA HAS LIMITED FUNDING TO CLEANUP SUPERFUND SITES ACROSS THE UNITED STATES. THE AGENCY MUST CAREFULLY DETERMINE THE BEST USE OF THESE FUNDS. AS A RESULT OF THE OUF, EPA BELIEVES THIS REMEDIAL ACTION IS APPROPRIATE FOR THE PROTECTION OF THE PUBLIC HEALTH AT THIS SUBSITE. THE ALTERNATIVE WATER SUPPLY SHOULD REDUCE THE EXPOSURE OF THE PUBLIC TO THE CONTAMINANTS, THEREBY REDUCING THE PUBLIC HEALTH RISKS AT THE SUBSITE. FEDERAL, STATE OR LOCAL HEALTH AGENCIES ARE THE APPROPRIATE GOVERNMENT ENTITIES TO CONDUCT FOLLOWUP HEALTH STUDIES ON THE POPULATION OF CONCERN.

COMMENT: A COUPLE OF COMMENTERS THOUGHT THE DISTRIBUTION LINES SHOULD BE EXTENDED FURTHER. ONE SUGGESTED THAT THE AREA WEST OF LOWELL AND EAST OF THE SPRING RIVER SHOULD BE INCLUDED. ANOTHER SUGGESTED THAT SECTIONS 1 AND 2 ABOVE THE NORTH SERVICE AREA SHOULD BE INCLUDED.

RESPONSE: THE EPA INTENDED TO INCLUDE ALL HOUSES WEST OF LOWELL AND EAST OF THE SPRING RIVER IN THE DISTRIBUTION SYSTEM. SECTIONS 1 AND 2 NORTH OF THE NORTH SERVICE AREA WERE LEFT OUT OF THE DISTRIBUTION SERVICE AREA BECAUSE THEY ARE THOUGHT TO BE OUTSIDE OF THE AREA AFFECTED BY MINING ACTIVITIES. THOSE AREAS AND OTHER AREAS COULD BE INCLUDED WHEN THE DISTRIBUTION SYSTEM IS DEVELOPED, ALTHOUGH EPA CANNOT PAY 90 PERCENT OF THE COSTS. ANOTHER COMMENTER STATED THAT HIS WELL, LOCATED OUTSIDE OF THE SUBSITE, WAS SAMPLED. THE EPA SAMPLED WELLS SITE-WIDE AND ONLY DETECTED PROBLEM WELLS IN THE GALENA SUBSITE.

III. SPECIFIC COMMENTS FROM PRPS

COMMENTS WERE RECEIVED FROM A GROUP OF COMPANIES THAT COMPRISE THE MAJORITY OF THE IDENTIFIED PRPS OF THIS SUBSITE. THE FOLLOWING DISCUSSES VARIOUS SIGNIFICANT COMMENTS FROM THIS GROUP AND PROVIDES EPA'S RESPONSE.

COMMENT: THE PRPS SUGGESTED THAT MINING ACTIVITIES ARE NOT THE SOLE SOURCE OF CONTAMINATION AND THAT NATURAL MINERALIZATION CONTRIBUTES TO THE PROBLEM.

RESPONSE: IN 1983 THE CHEROKEE COUNTY SITE WAS PLACED ON THE NATIONAL PRIORITIES LIST BECAUSE OF A KNOWN RELEASE OF HAZARDOUS SUBSTANCES INTO THE ENVIRONMENT AND BECAUSE OF THE SUBSTANTIAL THREAT OF CONTINUING RELEASES OF HAZARDOUS SUBSTANCES. THE EPA CONTENDS THAT THE SOURCE OF THE RELEASE IS THE ABANDONED MINING FACILITIES, WHICH CURRENTLY EXIST AT THE SITE AND CONSIST OF MINE WASTE PILES, OPEN MINE SHAFTS, UNDERGROUND MINING CAVERNS AND SMELTING WASTES AMONG OTHER WASTES. ALTHOUGH THE REMAINING UNDISTURBED ORE BODY MAY CONTRIBUTE TO THE RELEASE OF HAZARDOUS SUBSTANCES, THE ABANDONED MINE WORKINGS AND WASTES PROVIDE THE MAJOR PORTION, IF NOT ALL, OF THE HAZARDOUS SUBSTANCES RELEASED AND THREATENED TO BE RELEASED INTO THE SUBSITE ENVIRONMENT. THE MINING ACTIVITIES ALTERED THE EXISTING ORE BODY, WHICH CAUSED THE MINE WASTES AND REMAINING IN SITU ORE TO BE EXPOSED TO OXYGENATED WATER AND AIR, WHICH IN TURN CAUSED THE DIRECT RELEASE OF HAZARDOUS SUBSTANCES INTO THE SHALLOW GROUND WATER AT THE SUBSITE. THIS EXPOSURE CAUSES THE PRODUCTION OF ACID MINE DRAINAGE, WHICH IN TURN MOBILIZES THE HEAVY METALS AND CAUSES THE RELEASE OF HEAVY METALS INTO THE GROUND WATER. IN ADDITION, MINING ACTIVITIES MAY HAVE INCREASED THE FRACTURES IN THE ROCK FORMATIONS THAT CONTAIN THE SHALLOW GROUND WATER. THIS ALLOWS AN INCREASED MOBILITY OF THE GROUND WATER, HENCE AN INCREASED MIGRATION OF THE ACID MINE DRAINAGE AND THE SPREAD OF HEAVY METAL CONTAMINATION THROUGHOUT THE SHALLOW GROUND WATER AQUIFER. UNDER THE AUTHORITY OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT OF 1980, AS AMENDED, EPA HAS THE AUTHORITY TO RESPOND TO RELEASES OR THE THREAT OF RELEASES OF HAZARDOUS SUBSTANCES INTO THE ENVIRONMENT.

COMMENT: THE PRP COMMENTERS SUGGESTED THAT THE AREA IMPACTED BY THE MINING ACTIVITIES IS MUCH SMALLER THAN THE SUBSITE BOUNDARIES AS DEFINED BY EPA. THE COMMENTERS STATED THAT THE AREA ACTUALLY MINED WAS ABOUT 246 ACRES WITHIN THE 18 SQUARE MILE AREA ENCOMPASSED BY THE SUBSITE BOUNDARIES. THE PRPS DISAGREE WITH EPA'S INCLUSION OF THE ENTIRE 18 SQUARE MILES IN THE SUBSITE BOUNDARIES. THE PRPS ALLEGE THAT AREAS OUTSIDE OF THE IMMEDIATE MINED AREAS ARE NOT AFFECTED BY ACID MINE DRAINAGE. THE PRPS SUPPORT THEIR CONTENTIONS BY CITING A U.S. GEOLOGICAL SURVEY (USGS) REPORT. THE REPORT, BY TIMOTHY SPRUILL OF THE USGS, STATED THAT WITHIN THE GALENA SUBSITE NO CONCLUSIVE EVIDENCE EXISTS THAT DEMONSTRATES THE LATERAL MIGRATION OF THE SHALLOW GROUND WATER.

RESPONSE: THE EPA ACKNOWLEDGES THAT THE ABANDONED MINING FACILITIES COVER ONLY A SMALL PORTION OF THE ENTIRE GALENA SUBSITE (APPROXIMATELY 20 TO 30 PERCENT). NEVERTHELESS, EPA BELIEVES THAT THE ENTIRE SUBSITE IS AFFECTED BY THE SUBSEQUENT LATERAL MIGRATION OF THE CONTAMINATED GROUND WATER. THE EPA'S INVESTIGATIONS AT THE SUBSITE SUPPORT OUR CONTENTIONS. RANDOM SAMPLING OF WELLS LOCATED OUTSIDE OF THE IMMEDIATE MINED AREAS HAS SHOWN SEVERAL WELLS TO CONTAIN METALS EXCEEDING THE MCLS. THESE WELLS OBTAIN THEIR WATER FROM THE SHALLOW AQUIFER CONTAINED IN FRACTURED LIMESTONE FORMATIONS. THESE LIMESTONE FORMATIONS ARE THE SAME FORMATIONS WHERE THE UNDERGROUND MINES ARE LOCATED. THE EPA BELIEVES THAT NATURAL FLOW GRADIENTS AND ARTIFICIAL GRADIENTS, CREATED BY PUMPING OF WELLS, HAS CAUSED MIGRATION OF THE CONTAMINATED GROUND WATER WITHIN THE SUBSITE BOUNDARIES. THE ACID MINE DRAINAGE FLOWING THROUGH NATURAL AND MAN-MADE FRACTURES IN THE LIMESTONE FORMATION MAY EXPAND THE FRACTURES BY DISSOLVING THE LIMESTONE, THUS INCREASING THE FLOW OF CONTAMINATED GROUND WATER.

THE RESIDENTS OF THE SUBSITE, WHO ARE NOT CURRENTLY CONNECTED TO THE CITY OF GALENA'S PUBLIC WATER SUPPLY SYSTEM, ARE DEPENDENT ON THE SHALLOW AQUIFER FOR THEIR DRINKING WATER. SINCE THE RESIDENTS USE WELLS THAT ARE LOCATED IN THE SAME FORMATIONS AS THE MINES, AND THE MINES CURRENTLY CONTAIN GROUND WATER WITH THE HIGHEST LEVELS OF HEAVY METALS FOUND AT THE SUBSITE, THE EPA BELIEVES THAT ALL OF THESE PRIVATE WELLS ARE THREATENED BY MIGRATION OF THE CONTAMINATED GROUND WATER.

THE EPA ACKNOWLEDGES THAT BECAUSE OF THE COMPLEX HYDROGEOLOGY OF THE SITE, IT IS NOT POSSIBLE WITH THE CURRENT DATA TO DEFINE IN DETAIL THE GROUND WATER FLOW PATHS. THE EPA CONSIDERED INVESTIGATING THE SUBSITE FURTHER TO DEFINE THE DETAILED PATHWAYS, BUT DETERMINED THAT BECAUSE OF THE LARGE COST OF SUCH A PROJECT WITH NO GUARANTEE OF A CONCLUSIVE ANSWER, THE LIMITED FUNDS IN THE SUPERFUND WOULD BE BETTER SPENT ADDRESSING THE THREAT. THE USGS REPORT REFERENCED BY THE COMMENTER WAS PREPARED BEFORE EPA SAMPLED AND ANALYZED WATER FROM AN ADDITIONAL 133 WELLS IN THE SUBSITE. THE AUTHOR OF THE USGS REPORT HAS INFORMED EPA THAT WITH THE LIMITED DATA UTILIZED IN HIS REPORT, NO CONCLUSIVE STATEMENT COULD BE MADE REGARDING THE LATERAL MIGRATION OF THE GROUND WATER. EVEN WITH THE ADDITIONAL DATA, EPA AND THE USGS COULD NOT CONCLUSIVELY STATE THAT THE ACID MINE DRAINAGE WILL MIGRATE TO EACH WELL IN THE SUBSITE. HOWEVER, THE CURRENT UNDERSTANDING OF THE HYDROGEOLOGICAL CONDITIONS OF THE SUBSITE INDICATES THAT LATERAL MIGRATION IS OCCURRING AND IT IS ONLY A MATTER OF TIME BEFORE EACH WELL AT THE SUBSITE MAY BE CONTAMINATED FROM THE ACID MINE DRAINAGE CONTAINING THE HEAVY METALS.

COMMENT: SEVERAL PRPS COMMENTED ON THE ADEQUACY OF THE SAMPLING PROGRAM AND RESULTING DATA. THEY STATED THAT NO DATA WERE AVAILABLE TO REACH SOME OF THE CONCLUSIONS EPA MADE IN THE OUFSS REPORT.

RESPONSE: THE EPA DOES HAVE ADEQUATE DATA TO SUPPORT ALL THE CONCLUSIONS MADE IN THE OUFSS REPORT. THE PROCEDURES USED IN THE INVESTIGATIONS PROVIDED EXCELLENT INFORMATION FOR THE FEASIBILITY STUDY. THE ACTUAL DATA WERE NOT CONTAINED IN THE OUFSS REPORT, BUT ARE AVAILABLE IN THE ADMINISTRATIVE RECORD LOCATED IN GALENA AND IN KANSAS CITY. THE EPA BELIEVES THE COMMENTERS WILL BE SATISFIED IF THEY REVIEW THE ADMINISTRATIVE RECORD.

THE ADMINISTRATIVE RECORD INCLUDES RESULTS OF VARIOUS EPA INVESTIGATIONS OF THE SUBSITE. DURING 1985-86, EPA CONDUCTED TWO PHASES OF SAMPLING OF PRIVATE WELLS IN THE IMMEDIATE AREA AROUND THE CITY OF GALENA. TWENTY-FIVE PERCENT AT THE WELLS WERE SAMPLED IN THE FIRST ROUND. THE SECOND SAMPLING EPISODE WAS CONDUCTED BECAUSE SEVERAL WELLS WERE FOUND TO CONTAIN METALS EXCEEDING THE MCLS. DURING THE SECOND ROUND, THE EPA ATTEMPTED TO LOCATE AND SAMPLE THE REMAINING 75 PERCENT OF THE WELLS IN THE IMMEDIATE AREA TO IDENTIFY ADDITIONAL WELLS WITH CONCENTRATIONS OF METALS EXCEEDING MCLS. IN 1987, THE EPA EXPANDED THE AREA OF INVESTIGATION BECAUSE LOCATIONS SOUTHWEST OF GALENA WERE SUSPECTED TO BE AFFECTED BY MIGRATION OF THE CONTAMINANTS. THE 1987 INVESTIGATION ATTEMPTED TO LOCATE AND SAMPLE 25 PERCENT OF THE WELLS IN THAT AREA TO OBTAIN AN INDICATION OF WHETHER OR NOT THE PROBLEM EXTENDED INTO THOSE AREAS.

OF THE 72 WELLS SAMPLED IN THE IMMEDIATE CITY OF GALENA AREA, ABOUT 7 PERCENT EXCEEDED THE PRIMARY MCLS, 18 PERCENT EXCEEDED MAXIMUM CONTAMINANT LEVEL GOALS (MCLG) AND 14 PERCENT EXCEEDED HEALTH-BASED CRITERIA ESTABLISHED IN THE CLEAN WATER ACT (CWA). OF THE 49 WELLS SAMPLED IN THE SECOND AREA, 8 PERCENT EXCEEDED MCLS, 10 PERCENT EXCEEDED MCLGS AND 18 PERCENT EXCEEDED CWA CRITERIA.

DURING 1987, A FEW WELLS WERE SAMPLED THREE TIMES AND WERE FOUND TO VARY IN THE WATER QUALITY. THIS VARIABILITY IS MOST LIKELY DUE TO CHANGES IN PUMPING RATES THROUGHOUT THE AQUIFER OR PRECIPITATION VARIABILITY. ONE COMMENTER SUGGESTED THAT THE VARIABLE COULD BE IN THE FIELD OR LABORATORY TECHNIQUES AS OPPOSED TO VARIATIONS WITHIN THE AQUIFER. THE EPA BELIEVES THAT FIELD AND LABORATORY TECHNIQUES UTILIZED IN THIS INVESTIGATION WERE MOST ACCURATE. THE EPA BELIEVES THAT THE DATA INDICATE THE WATER QUALITY TO BE QUITE VARIABLE; THEREFORE, THE ONE-TIME SAMPLING OF MANY WELLS MAY NOT PROVIDE REPRESENTATIVE RESULTS OF THE LONG-TERM QUALITY OF THE WATER. MORE WELLS MAY ACTUALLY EXCEED MCLS THAN INDICATED IN THE RESULTS.

COMMENT: SEVERAL PRPS COMMENTS PERTAINED TO THE SELECTION OF OTHER AVAILABLE ALTERNATIVES AS OPPOSED TO THE SELECTED ALTERNATIVE. THE COMMENTERS WERE UNDER THE IMPRESSION THAT EPA BELIEVED THAT ALL THE WELLS IN THE SUBSITE WERE CURRENTLY CONTAMINATED AND POINTED OUT THAT ONLY 10 PERCENT EXCEEDED THE MCLS AS OPPOSED TO 100 PERCENT. THE COMMENTERS SUGGESTED THAT THE SELECTED REMEDIAL ACTION SHOULD BE CONFINED TO ONLY THE CURRENTLY CONTAMINATED WELLS WITH PERIODIC MONITORING OF THE REMAINING WELLS. THEY POINTED OUT THAT EPA HAS ALREADY PROVIDED INDIVIDUAL WATER TREATMENT UNITS ON SEVERAL OF THE CONTAMINATED

PRIVATE WELLS.

RESPONSE: THE EPA IS INCLUDING THE WHOLE SUBSITE IN THE REMEDIAL ACTION. SEVERAL WELLS ARE CURRENTLY CONTAMINATED AND ALL THE OTHERS ARE AT RISK BECAUSE OF THE THREAT OF THE MIGRATION OF THE CONTAMINANTS TO ALL WELLS. THE EPA INITIALLY CONSIDERED SUPPLYING BOTTLED WATER TO ONLY THOSE HOUSEHOLDS WITH CONTAMINATED WATER WELLS AND MONITORING THE REMAINING WELLS, ALTHOUGH THIS CONSIDERATION WAS NOT INCLUDED IN THE OUF'S. THE COST ESTIMATES OF THE PROPOSED REMEDIAL ACTION AND THE BOTTLED WATER WITH MONITORING ALTERNATIVE ACTION WERE THE SAME, YET THE PROPOSED ACTION IS MUCH MORE PROTECTIVE OF HUMAN HEALTH. AS THE COMMENTERS POINTED OUT, EPA HAS SUPPLIED INDIVIDUAL WATER TREATMENT UNITS TO SEVERAL WELLS, HOWEVER THEY CANNOT BE PROVIDED TO ALL WELLS AS A LONG-TERM REMEDY, ONLY THE WELLS OF IMMEDIATE HEALTH RISK REQUIRE THIS TYPE OF TEMPORARY RESPONSE ACTION. THE INDIVIDUAL WATER TREATMENT UNITS REQUIRE MONTHLY MAINTENANCE IN ORDER FOR THEM TO REMOVE THE CONTAMINANTS AND PERIODIC SAMPLING TO MONITOR THEIR EFFECTIVENESS. RESIDENTS ON SODIUM-RESTRICTED DIETS SHOULD NOT DRINK WATER TREATED BY THESE UNITS BECAUSE THEY ADD A LARGE AMOUNT OF SODIUM TO THE WATER. BECAUSE OF THESE PROBLEMS, THE UNITS ARE CONSIDERED ONLY TO BE TEMPORARY. THE OVERALL REMEDY REQUIRES A PERMANENT SOLUTION.

COMMENT: THE PRPS SUGGESTED THAT THE ALTERNATIVE WATER SUPPLY COULD BE PROVIDED BY BOTTLED WATER DELIVERY AS ANALYZED IN ALTERNATIVE 2 OF THE OUF'S REPORT. THEY STATED THAT IT IS PROTECTIVE OF PUBLIC HEALTH, MEETS APPLICABLE AND RELEVANT OR APPROPRIATE REQUIREMENTS (ARARS), PROVIDES A RELIABLE SUPPLY OF WATER AND HAS GOOD TECHNICAL FEASIBILITY. THEY STATED IT WAS SUPERIOR TO THE SELECTED REMEDY BECAUSE IT WOULD HAVE NO POTENTIAL INDIRECT ENVIRONMENTAL EFFECTS, WOULD REQUIRE LESS INSTITUTIONAL AND ADMINISTRATIVE ACTIVITIES TO IMPLEMENT, WOULD BE MORE FLEXIBLE AND COULD BE IMPLEMENTED MORE QUICKLY.

RESPONSE: THE EPA ACKNOWLEDGES THAT THE BOTTLED WATER ALTERNATIVE HAS MANY GOOD POINTS, HOWEVER ALTERNATIVE 3 OF THE OUF'S WAS SELECTED FOR SEVERAL REASONS THAT MAKE IT SUPERIOR TO ALTERNATIVE 2. THE PUBLIC WATER DISTRIBUTION SYSTEM IS MUCH MORE PROTECTIVE OF PUBLIC HEALTH BECAUSE ALL INDOOR WATER TAPS WILL PROVIDE GOOD QUALITY WATER, NOT JUST THE BOTTLED WATER TAPS. RESIDENTS WOULD BE DEPENDENT ON INDEFINITE DELIVERY TIMES FOR THE BOTTLED WATER ALTERNATIVE, WHILE THE PUBLIC SUPPLY WILL BE CONSTANT.

FEDERAL LAW REQUIRES EPA TO CONSIDER LONG-TERM OPERATION AND MAINTENANCE COSTS IN SELECTING REMEDIAL ACTIONS. THIS IS A VERY IMPORTANT CONSIDERATION FOR ALTERNATIVE 2 BECAUSE THE O&M PER HOUSEHOLD IS EXPECTED TO BE \$46 PER MONTH AS OPPOSED TO \$20 PER MONTH FOR ALTERNATIVE 3, THE SELECTED REMEDY. THE COMMENTERS STATED THAT ALTERNATIVE 3 COULD CAUSE AN INDIRECT ENVIRONMENTAL EFFECT ON THE DEEP AQUIFER DUE TO INCREASED PUMPING. A PRELIMINARY REVIEW OF DATA COLLECTED DURING THE SUMMER OF 1987 INDICATES NO NEGATIVE EFFECTS FROM THE ADDITIONAL PUMPING OF THE DEEP AQUIFER. ALTHOUGH A REVIEW OF THE PRELIMINARY DETERMINATION WILL BE CONDUCTED PRIOR TO IMPLEMENTATION OF THE SELECTED REMEDY. THE REVIEW IS EXPECTED TO CONFIRM THAT NO ADVERSE AFFECTS WILL RESULT FROM THE INCREASED PUMPING.

TABLE 1
CONCENTRATIONS OF TOTAL METALS
OBSERVED IN PRIVATE WELLS

METALS	AVERAGE OBSERVED VALUE (UG/L) (A)	MAXIMUM OBSERVED VALUE (UG/L)	STANDARD OR CRITERIA (UG/L)
BARIUM	79	390	1,000 (B)
CADMIUM	7.8	180	10 (B)
CHROMIUM (TOTAL)	95	95	50 (B)
COPPER	23	940	1,000 (C)
LEAD	28	230	50 (B) (D)
MANGANESE	100	3,400	50 (C)
MERCURY	0.059	0.44	2 (B)
NICKEL	23	190	150 (E)
SELENIUM	28	50	10 (B)
SILVER	7.3	11	50 (B)
ZINC	980	15,000	5,000 (C)

(A) = MICROGRAMS PER LITER

(B) = PRIMARY MCL, SAFE DRINKING WATER ACT

(C) = SECONDARY MCL, SAFE DRINKING WATER ACT

(D) = THE PROPOSED MCLG (SAFE DRINKING WATER ACT) IS 20 UG/L

(E) = LIFETIME HEALTH ADVISORY (EPA, OFFICE OF DRINKING WATER)